Claims

What is claimed is:

1. A multiple channel system for a twisted pair telephone wire local loop system, comprising:

a subscriber gateway system having an n-channel transceiver connected to the twisted pair telephone wire;

an n-channel transceiver at a central office connected to the twisted pair telephone wire;

a local circuit switch connected to an output of the n-channel receiver at the central office; and

a digital subscriber line access multiplexer connected to the output of the n-channel receiver at the central office.

2. The multiple channel system of claim 1, wherein the n-channel transceiver in the subscriber gateway has a low pass filter that passes a POTS telephone signal.

3. The multiple channel system of claim 1, wherein the n-channel transceiver in the subscriber gateway transmits a plurality of frequency division multiplexed signals.

4. The multiple channel system of claim 1, wherein the n-channel transceiver in the subscriber gateway transmits a plurality of time division multiplexed signals.

5. The multiple channel system of claim 1, wherein the n-channel transceiver in the subscriber gateway transmits a plurality of code division multiplexed signals.

6. The multiple channel system of claim 1, wherein the n-channel transceiver transmits and receives a voice signal over one of an n-channels.

7. The multiple channel system of claim 1, wherein the n-channel transceiver transmits and receives a data signal over one of the n-channels.

8. The multiple channel system of claim 1, wherein the n-channel transceiver transmits a plurality of baseband signals separated by frequency.

9. A bandwidth allocation system for a twisted pair telephone wire local loop system, comprising:

a subscriber digital filter system connected to the twisted pair telephone wire;

a subscriber controller sending a control signal to the subscriber digital filter system;

an office digital filter system connected to the twisted pair telephone wire; and

an office controller sending a control signal to the office digital filter system.

10. The bandwidth allocation system of claim 9, further including a splitter connected to the twisted pair telephone wire and having a low pass output connected to a POTS telephone and a high pass output connected to the subscriber digital filter system.

11. The bandwidth allocation system of claim 10, wherein the splitter has an analog low pass filter and an analog high pass filter.

12. The bandwidth allocation system of claim 9, wherein the office controller receives a bandwidth allocation request and calculates the digital filter coefficients necessary to realize a digital filter to satisfy the bandwidth allocation request.

13. The bandwidth allocation system of claim 12, wherein the office controller transmits the digital filter coefficients to the office digital filter system.

14. The bandwidth allocation system of claim 13, further including a control channel designed to pass control information between the subscriber controller and the office controller.

15. The bandwidth allocation system of claim 14, wherein the office controller transmits the digital filter coefficients to the subscriber controller over the control channel.

16. The bandwidth allocation system of claim 9, further including a link quality testing system connected to the twisted pair telephone wire.

17. The bandwidth allocation system of claim 9, further including a subscriber transceiver coupled to the subscriber controller and the subscriber filter system.

18. A multiple channel system for a twisted pair telephone wire local loop system, comprising:

a first multiple channel transceiver;

a splitter connected to the twisted pair telephone wire having a low pass connection to a POTS telephone and a high pass connection to the first multiple channel transceiver

a first controller sending a control signal to the first multiple channel transceiver;

a second multiple channel transceiver connected to the twisted pair telephone wire;

a second controller sending a control signal to the second multiple channel transceiver;

a local circuit switch connected to an output of the second multiple channel transceiver; and

a digital subscriber line access multiplexer connected to the output of the second multiple channel transceiver.

19. A method of operating a bandwidth allocation system for a twisted pair telephone wire local loop system, comprising the steps of:

(a) receiving a bandwidth allocation request at an office controller;

(b) determining if a frequency band is available on a selected twisted pair telephone wire;

(c) when the frequency band is available, determining a filter scheme and a frequency translation scheme;

(d) transmitting the filter scheme and the frequency translation scheme to a subscriber controller over a control channel; and

(e) sending a bandwidth allocation available message by the office controller.

20. The method of claim 19, wherein step (b) further includes the steps of:

(b1) selecting an unused section of frequency;

(b2) determining if the unused section of frequency has sufficient bandwidth;

(b3) when the unused section of frequency has sufficient bandwidth, performing a link quality analysis;

(b4) when the link quality analysis is greater than a predetermined minimum, defining the unused section of frequency as available.